

State of California
The Resources Agency
Department of Fish and Game

**RECOVERY STRATEGY FOR
CALIFORNIA COHO SALMON**
Report to the California Fish and
Game Commission

Prepared by
The California Department of Fish and Game

Species Recovery Plan Report 2003-1

August 2003

Range-wide Recommendations

Many of the potential recovery actions to address the threats and issues discussed in Chapter 3 (Threats) have application across most, if not all, of the range of coho salmon in California. These issues do not necessarily threaten or impact coho salmon everywhere or to the same degree across the range. The Department, in conjunction with the CRT, has developed the following recommendations with broad applicability. Parties responsible for implementing these recommendations are identified in Section 10.5 (in preparation).

The following recommendations do not constitute a complete list. Only recommendations on topics addressed by the CRT to date are presented here. Recommendation numbers presented below are derived from an interim numbering system used during the ongoing discussions with the CRT and are not sequential. They are presented here only as unique identifiers for reference to individual recommendations.

6.1 STREAM FLOW

SW I-B-1	Encourage the use of passive diversion devices designed to allow diversion of water only when minimum flow requirements are exceeded. Identify and develop adequate passive diversion structure designs.
SW I-C-1	Plan water supply development and growth that are not harmful to coho salmon habitat. Work in coordination with the California Department of Housing and Community Development, Association of Bay Area Governments, counties, cities, water districts, and others. Provide funding and education to accomplish this.
SW I-D-1	Encourage elimination of unnecessary and wasteful use of water from coho salmon streams, through education components of this strategy. Encourage water conservation for existing uses.
SW I-D-4	Evaluate the rate and volume of water drafting for dust control in streams or tributaries and where appropriate, minimize water withdrawals that could impact coho salmon. When feasible, use alternatives to water as a dust palliative (including EPA-certified compounds) that are consistent with maintaining or improving water quality.

SW I-D-5	Explore ways to improve implementation of the Department's Lake or Stream Alteration Notification and Agreement process to protect coho salmon from the adverse affects of projects that would alter the bed, banks, channel, or natural flow streams.
SW I-D-6	Pursue funding for the assessment, cataloging, and compliance monitoring of water diversions within the range of coho salmon. Upgrade the existing water rights information system so that water allocations can be readily quantified by watershed.
SW I-D-7	Provide conservation incentives to minimize negative effects on coho salmon of water drafting for roads and fire suppression, including, but not limited to: <ul style="list-style-type: none"> a. Streamline permitting for actions that result in an improvement of instream flows; Support multiple uses of water storage systems ; and b. Cost-share funding where low-flow, trickle recharge water storage is used to avoid adversely affecting stream flow or coho salmon habitat.
SW I-D-8	Support a comprehensive streamflow evaluation program to determine instream flow needs for coho salmon in priority watersheds.

6.2 WATER RIGHTS

SW II-A-1	Review authorized diversions that have no provisions to protect coho salmon. Review should be conducted in order of priority for streams with coho salmon habitat.
SW II-A-2	Identify unauthorized diversions.
SW II-A-4	Where flows are a limiting factor in priority coho salmon habitat, petition the SWRCB to add streams to the Declaration of Fully Appropriated Streams.
SW II-A-5	Inventory water use and water availability in streams with coho salmon habitat. Ensure that water availability analyses on priority coho salmon habitat accurately reflect existing water use and availability. Require stream flow gauging devices on priority coho salmon streams when approving water development projects. Continue to require riparian and pre-1914 water users to file annual statements of diversion and use.
SW II-B-1	Pursue opportunities to acquire or lease water, or acquire water rights from willing sellers for coho salmon recovery purposes. Develop incentives for water right holders to dedicate in-stream flows for the protection of coho salmon (Water Code section 1707).
SW II-B-2	Evaluate the cumulative effects to coho salmon from the creation of new riparian water rights associated with land subdivisions and rezonings. Where cumulative impacts on flows will be detrimental to coho salmon, consider mitigations or conditions that would protect coho salmon or avoid adverse effects to coho salmon from, which may include but not necessarily be limited to requirements that would not allow riparian water rights for the new parcels at the time subdivision approvals are made.

- SW II-B-3 Within the range and distribution of coho salmon, diversion screens should be constructed, repaired, upgraded, reconstructed, and maintained in accordance with Department/NOAA Fisheries Screening Criteria. Responsible parties must obtain incidental take authorizations for operation of the screens. Those that comply with the Department/NOAA Fisheries Screening Criteria should be assumed by the Department to not take coho salmon with respect to the screens.

6.3 FISH PASSAGE

- SW III-A-1 Continue and complete assessments and prioritizations for correction of fish passage barriers.
- SW III-A-2 Develop and maintain a database of barriers to fish passage.
- SW III-C-1 Encourage funding authorities to allocate adequate resources to prioritize and upgrade culverts within the range of coho salmon to pass 100-year flows and associated debris loads (e.g. LWD that might be mobilized).
- SW III-C-2 Evaluate NOAA Fisheries standards for passage at summer dams, and if necessary, develop additional policies and guidelines for passage at summer dams. Implement any recommendations resulting from this process.
- SW III-C-3 Evaluate the desirability and feasibility of relocating stranded juvenile coho salmon to nearby underutilized high quality habitat. Develop a policy addressing this issue, and implement recommendations arising from the evaluation.
- SW III-C-4 Encourage FEMA to fund upgrades to flood-damaged facilities to meet the requirements of the Endangered Species Act.
- SW III-C-5 Evaluate the desirability and feasibility of relocating juvenile coho salmon from streams with a very high density of fish to nearby under-utilized high quality habitat. Develop a policy addressing this issue, and implement recommendations arising from the evaluation.
- SW III-C-6 Encourage funding authorities to allocate adequate budgets to federal, state, and local agencies for fish passage projects. This includes, but is not limited to, funding for road maintenance programs and capital project activities.

6.4 POLLUTANTS

- SW V-B-1 Improve water quality by reducing or minimizing point and non-point domestic and municipal sources of nutrient input (i.e. sewage treatment plant discharge, septic system discharge, and storm drain runoff). Support efforts by cities and rural communities to complete system upgrades to achieve Clean Water Act compliance.
- SW V-E-1 Continue outreach, education, and enforcement related to hazardous materials spills, illegal dumping, and household hazardous waste and hazardous materials spills in creeks. Provide education on the Cal Tip program.
- SW V-E-3 Continue to fund and support the CalTip program. Provide additional training for Wardens to identify water pollution problems and promote coordination with other responsible agencies. Coordinate water rights training for resource agency personnel.

6.5 SEDIMENTS

- | | |
|-----------|--|
| SW VI-A-2 | Identify and prioritize specific sediment source locations for treatment that may deliver sediment to coho salmon streams. Encourage the use of protocols, such as the <i>California Stream Habitat Restoration Manual Guidelines</i> . Work with others to educate and provide technical assistance to landowners to implement upgrades. |
| SW VI-B-1 | Encourages agencies and landowners to restore natural drainage patterns and minimize hydrologic connectivity of roads, where feasible. Encourage funding agencies to provide annual funding for implementation of the program. |
| SW VI-B-2 | Continue to fund and provide technical support to local government and private landowner actions to reduce identified sediment input from upslope sources. Basin-wide assessments should prioritize remediation activities, which would include slope stabilization and minimizing sediment production. |
| SW VI-C-1 | Encourage, when necessary and appropriate, restricted access to unpaved roads in winter to reduce road degradation and sediment release. Where restricted access is not feasible, encourage measures such as rocking to prevent sediment from reaching coho salmon streams. |
| SW VI-D-1 | <p>Encourage federal, state, and county agencies and private landowners to reduce impacts to coho salmon habitat from public and private road systems. Continue road and/or watershed assessments to identify and prioritize sources and risks of road-related sediment delivery to watercourses. Support activities to:</p> <ul style="list-style-type: none">a. Reduce road densities where necessary and appropriate;b. Upgrade roads and road-maintenance practices to eliminate or reduce the potential for concentrating run-off to streams during rainfall events. Employ best available technology when appropriate,c. Decrease potential for stream flow to become diverted at road crossings during high flow events, resulting in flow along the road that returns to the channel at undesirable locations.d. Stabilize slopes to minimize or prevent erosion and to minimize future risk of eroded material entering streams.e. Minimize alteration of natural hill slope drainage patterns; andf. Encourage funding authorities to allocate adequate budgets to federal, state, and local agencies and private landowners for road maintenance activities, capital project activities, and dedicated funding to pay for fish passage projects. |

6.6 WATER TEMPERATURE

- | | |
|----------|--|
| SW X-B-1 | Identify and implement actions to maintain and restore water temperatures to meet habitat requirements for coho salmon in specific streams. |
| SW X-B-2 | Offer funding and permit incentives to restore stream habitat where lack of LWD, riparian cover, simplified stream morphology and other conditions have been determined to be limiting factors to coho salmon habitat. |

6.7 RECRUITMENT OF LARGE WOODY DEBRIS

- SW XIII-B-1a Identify those riparian vegetation communities that provide good opportunities for conifer LWD recruitment to coho salmon habitat. Communicate the importance of these riparian communities to appropriate agencies, restoration funding groups, and landowners, and work to maintain them in a healthy condition.
- SW XIII-B-1b Prioritize riparian vegetation communities for the purposes of restoring conifer LWD recruitment.
- SW XII-B-2 Funding authorities should provide funding and technical support for riparian restoration.

6.8 STREAM COMPLEXITY

- SW XIII-C-1 Modify maintenance manuals for consistency with habitat requirements and protection for coho salmon.
- SW XIII-C-2 Where appropriate and feasible, work with all parties, including landowners, to reconfigure levees and channelized streams to benefit coho salmon.

6.9 ECOLOGICAL REFUGIA

- SW XV-A-1 Identify key coho salmon refugia and inform land managers and other agencies of their locations and characteristics.
- SW XV-B-1 Maintain or re-establish geographic distribution of coho salmon by continuing to allocate substantial improvement efforts towards identified key refugia with substantial coho salmon populations and/or otherwise suitable conditions.

6.10 HABITAT FRAGMENTATION

- SW XVI-B-1 Restore habitat connectivity between coho salmon populations in coastal and low-gradient inland streams to promote the long-term viability of coho salmon.
- SW XVI-B-2 Reduce habitat fragmentation by restoring fish passage between high quality habitat channels to allow for gene flow between breeding populations within targeted coho salmon watersheds.

6.11 COMPETITION

- SW XVIII-A-1 Develop a rapid-response eradication plan that can be implemented when invasive non-native species that negatively affect coho salmon are newly detected.
- SW XVIII-A-2 Develop management guidelines to mitigate the impacts of non-native fish species on coho salmon.
- SW XVIII-A-3 Encourage removal of non-native fish species from stock ponds where these fish pose a threat to coho salmon.

6.12 GENETICS

- SW XX-B-1 Promote recovery actions that maintain the local genetic diversity of coho salmon populations to maximize fitness and long-term viability of coho salmon populations.

6.13 RIPARIAN VEGETATION

- SW XXII-A-2 Where necessary, provide riparian protection from livestock while providing off-stream watering.
- SW XXII-A-4 Encourage restoration of LWD and shade by improvement of existing riparian zones through planting, release of conifers, and control of alders, blackberries, and other competitors. The Department and others should provide incentives to landowners, such as technical support.
- SW XXII-A-5 Inventory and evaluate on a site-specific basis the adequacy of stream buffer zones and riparian and wetland habitat on public and private lands. This review should be coordinated between all agencies with regulatory jurisdiction.
- SW XXII-A-6 Develop and implement initiatives, including funding where appropriate, to improve stream buffers that have been determined to be inadequate.

6.14 LAND USE

- SW XXV-A-1 Continue providing subvention funds to counties for Williamson Act contracts to help preserve a rural landscape for more effective recovery of coho salmon.
- SW XXV-B-3 Where necessary, revise General Plans, Local Coastal Plans, and/or Community Development Plans to direct development away from riparian habitats on coho salmon streams or tributaries. Establish incentives and standards to protect riparian and wetland areas on private lands, based on flexible subdivision design and other cooperative land development mechanisms.
- SW XXV-B-4 Encourage continued economically sustainable management of forest and agricultural lands in the range of coho salmon to reduce the potential for conversion to residential or commercial development.
- SW XXV-B-5 Within the CCC ESU, evaluate the adequacy of riparian buffers and development setbacks where needed for protecting riparian and wetland habitat on county, city, and private lands adjacent to coho salmon streams.
- SW XXV-B-6 Develop and implement initiatives to expand inadequate streamside protections for coho salmon. Include setbacks for development, restrictions on grading activities, and setbacks for septic system development. Enforce policies with ordinances.
- SW XXV-C-1 Acquire conservation easements or land in fee title from willing landowners to protect coho salmon habitat.

6.15 PUBLIC OUTREACH

- SW XXVIII-B-1 Support local governments, interested parties, and property owners in the development of incentives for landowners who participate in activities that exceed legal requirements or timelines to protect and/or restore coho salmon habitat and watershed processes.

6.16 INTEGRATION WITH OTHER PLANS AND PROGRAMS

- SW XXX-B-1 As feasible, prepare and implement TMDL plans on a schedule that gives priority to key coho salmon watersheds.
- SW XXX-B-3 Develop and implement sediment reduction and water quality improvement plans and meet and expedite the Clean Water Act TMDL requirements through technical assistance and incentives to landowners, making watersheds with coho salmon the highest priority for assistance.
- SW XXX-B-5 Ensure that TMDL standards provide protection for coho salmon.
- SW XXX-B-6 Conduct outreach to state agencies and local governments to encourage their participation in the TMDL process to ensure the standards provide protection of coho salmon.
- SW XXX-D-1 Implement Fire Safe Councils' recommendations promoting the reduction of fuel near residences to reduce human-caused fires spreading into the forest and causing harm to coho salmon habitat.
- SW XXX-E-1 Continue to implement FishNet 4C and Five County Salmon Restoration goals, including adopting and implementing written Operations and Maintenance Guidelines, training staff on guidelines, addressing fish passage and road sedimentation issues, developing riparian protections, promoting alternatives to conventional bank stabilization, and developing land use policies favorable for coho salmon.
- SW XXX-E-2 Incorporate the FishNet 4C and Five County adopted Roads Operations and Maintenance Guidelines within incidental take authorizations under CESA and as part of the coho salmon recovery strategy.
- SW XXX-J-1 After delisting is achieved, review the recovery strategy to determine how to continue implementation of appropriate elements of the recovery strategy, pursuant to and consistent with other applicable local, state, and federal law and voluntary measures, to achieve restoration of tribal, recreational, and commercial fisheries and avoid relisting of the species.

6.17 PERMITTING

- SW XXXI-A-1 Federal, state, local governments and other interested parties should cooperate to develop regulatory assurance mechanisms to encourage land managers, local governments, and landowners to implement coho salmon habitat restoration and/or enhancement projects.

6.18 WATERSHED PLANNING

- SW XXXII-B-2 Provide adequate funding to the agencies to coordinate and support preparation of comprehensive watershed assessments and restoration plans that:
- Include a professional fisheries scientist,
 - Assess stream flow, water diversions, water quality, sediment sources, fish barriers, riparian corridors, instream habitat, estuarine habitat, and land use, as necessary, and
 - Identify, prioritize, and implement site-specific restoration projects to benefit coho salmon.

6.19 ENFORCEMENT OF EXISTING LAWS

- SW XXXIII-A-01 Support full enforcement of existing laws, codes, regulations, and ordinances that address the protection of coho salmon and their habitat. These include, but are not limited to: Fish and Game Code Sections 1600, 5650, 5900 through 6100 (with an emphasis on 5901, 5937, and 6100), Public Resources Code Sections 10000-10005, the California Endangered Species Act, and the Federal Endangered Species Act. The term “enforcement” includes, but is not limited to, education, issuing warnings, issuing citations, developing cases for referral to district attorneys offices and/or the Office of the Attorney General.
- SW XXXIII-A-02 Provide adequate budgetary funding and positions for agencies with enforcement authority to enforce laws and codes relevant to coho salmon protection.
- SW XXXIII-A-03 Review diversions and use of water in priority coho salmon streams to determine which permits and/or licenses need modification for the protection of coho salmon. Where necessary, formally request that the terms of water rights permits/ licenses be modified for protection of coho salmon. This will require field studies to evaluate impacts and develop supportive evidence and formal hearings to consider proposed changes. This program must be adequately funded to be implemented.
- SW XXXIII-A-04 Agencies with the primary authority for fish and water should lead enforcement efforts and coordinate with all local, state and federal agencies with regulatory authority affecting coho salmon.
- SW XXXIII-A-05 Request that enforcement to prevent unauthorized diversion and use of water and water permit processing a high priority. Enforcement of existing codes including Water Code §§ 1052 Trespass and 1831 et seq., Cease and Desist. Adequate funding should be provided for enforcement and permit processing staff.
- SW XXXIII-A-06 Support continued funding for the California District Attorneys’ Association’s Environmental Circuit Prosecutors program and/or Environmental Project for applicable district attorney offices in the range of coho salmon.

- SW XXXIII-A-07 Dedicate fines from violations affecting coho salmon or coho salmon habitat to coho salmon recovery and restoration activities consistent with the Department's Coho Salmon Recovery Strategy, including but not limited to education and outreach. Emphasis should be placed on keeping fine money in watersheds where the violation occurred to address existing coho salmon restoration plans and projects. This recommendation applies to fines that are not otherwise mandated by law to be directed to other purposes.
- SW XXXIII-A-08 Examine penalty schedules and, if necessary, explore ways to adjust penalty schedules to reflect the impact of violations to coho salmon, taking into account other penalties that may be enforced in association with the same activity.
- SW XXXIII-A-10 Develop an outreach/information and education program that targets agency personnel, judges, district attorneys, the Attorney General's Office, municipalities, and other affected or interested parties concerning the status of coho salmon and the value and importance of coho salmon resources and coho salmon recovery. Provide educational materials, outreach and training for issues such as sport fishing (inadvertent incidental take), poaching (directed take) and habitat destruction (LWD removal, riparian destruction, illegal stream crossings, pollution, illegal water withdrawal, etc.).
- SW XXXIII-A-11 Discourage illegal dumping, poaching, and other illegal activities by promoting "neighborhood watch" programs for streams and/or watersheds.
- SW XXXIII-A-27 Establish environmental task forces made up of state, local, and federal enforcement agencies that operate in the range of coho salmon.
- SW XXXIII-A-28 Increase funding for the Department's CALTIP program.
- SW XXXIII-A-29 Seek programmatic incidental take authority with respect to screen design and installation that conforms to Department/NOAA Fisheries screening criteria.

6.20 IMPLEMENTATION

- SW XXXIV-A-1 Provide funding and incentives for any projects that exceed requirements of existing law and/or expedite timelines required by law. All commitments of state and local agencies are subject to availability of funding. Funding and incentives provided by state fishery restoration accounts should be prioritized as follows:
- Projects that exceed requirements of existing law and/or expedite timelines required by current law,
 - Projects that were installed in accordance with laws and standards in effect at the time the work was done,
 - Projects that contain elements of a. and b. above, and
 - Projects that do not meet elements of a. and b. above, but which are not a part of new development or under enforcement actions.
- Projects that are mitigation for new development or activities under enforcement actions are not fundable.
- SW XXXIV-A-2 Support continued and increased funding for the California Conservation Corps to implement coho salmon restoration projects.

6.21 INSTREAM GRAVEL MINING

- SW XXXV-A-1 Within known or historic coho salmon habitat, permits for instream gravel mining should require:
- a. A total yearly extraction volume proportionally based on the long-term mean average recruitment of gravel into the mining reach;
 - b. An extraction strategy that will promote species recovery by retaining sufficient gravel to preserve and restore the alluvial structure necessary for forming and maintaining critical physical habitat in, up- and downstream of the mined reach; and
 - c. A monitoring plan capable of demonstrating that the extraction strategy is successful.

These conditions may not be necessary if it can be determined that the extraction volume and method protect coho salmon and their habitat (including, but not limited to, protection of habitat attributes such as water quality, riparian vegetation, and the geomorphic features that control local hydraulics and safeguard the physical processes that create and maintain habitat).

¹ This recommendation is a modification of one developed by DFG staff and has not been specifically reviewed by the CRT.